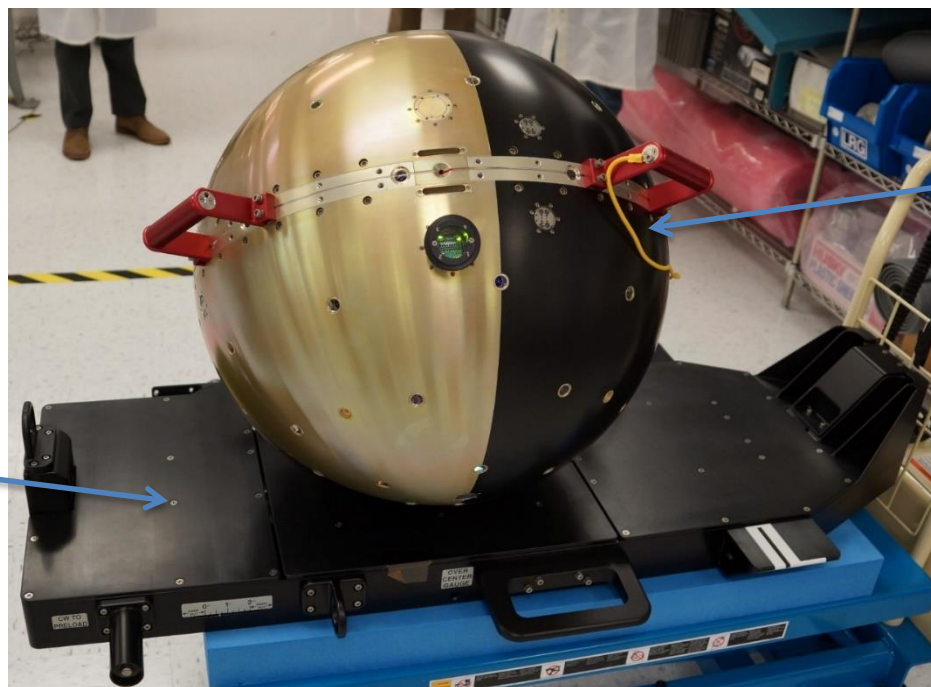




Update on Progress of SSIKLOPS (Space Station Integrated Kinetic Launcher for Orbital Payload Systems) - Cyclops



SpinSat

Cyclops

AIAA Small Satellite Conference

Authors: D. Newswander (NASA JSC), J. Smith Ph.D. (NASA JSC), C. Lamb (DoD STP), P. Ballard Ph.D. (DoD STP)

Presenter: D. Newswander (NASA JSC)



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VISION

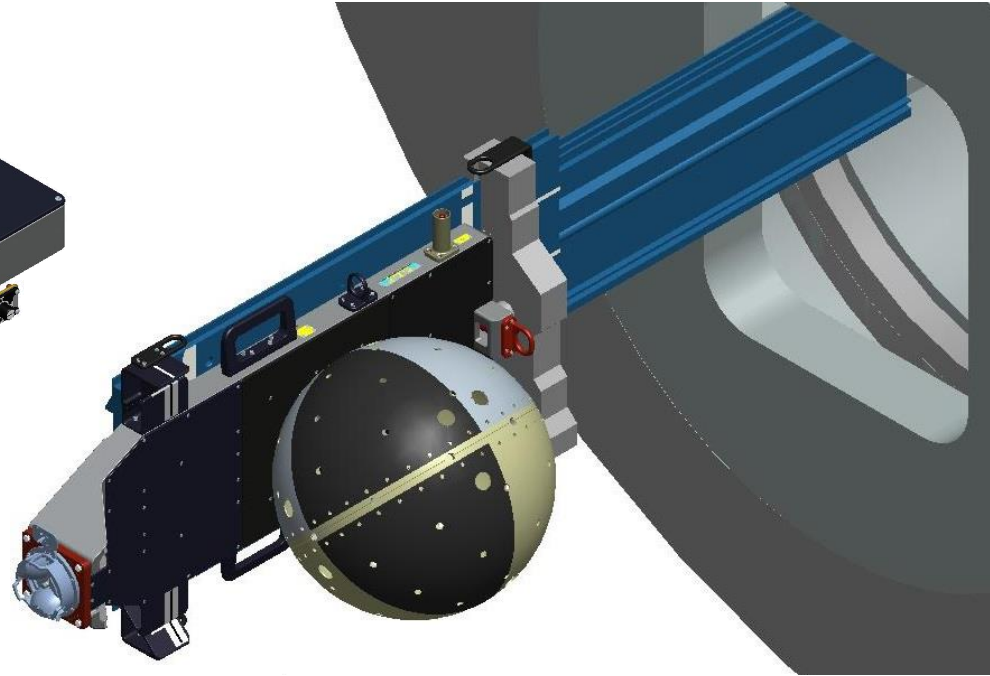
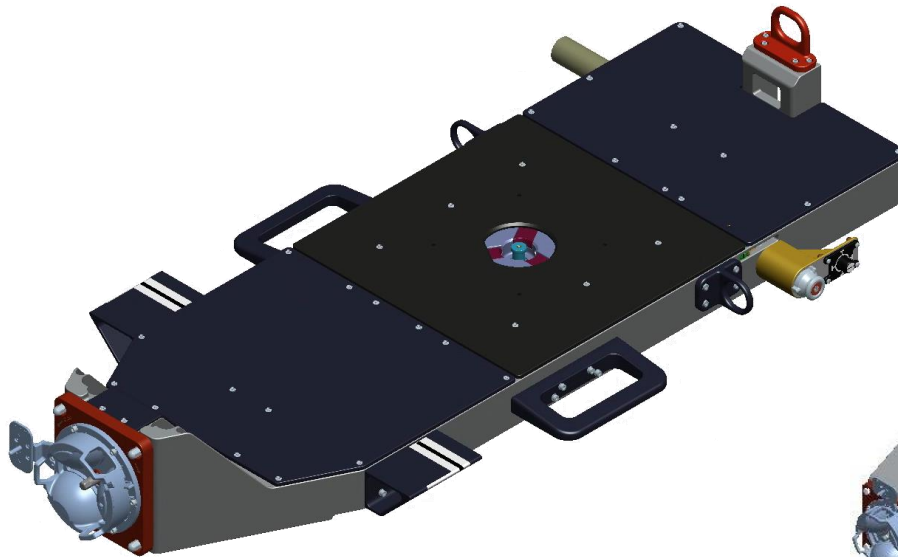


CAPABILITY

- Access to space for satellites in the 50-100kg class is a challenge for the small satellite community.
- Rideshare opportunities are limited and costly, and the satellite must adhere to the primary payload's schedule / launch needs.
- Launching as an auxiliary payload on an Expendable Launch Vehicle presents many technical, envir., and logistical challenges.
- Cyclops provides small satellites the infrastructure to be deployed from the ISS into orbit with minimal technical, envir., logistical, and cost challenges.



CYCLOPS

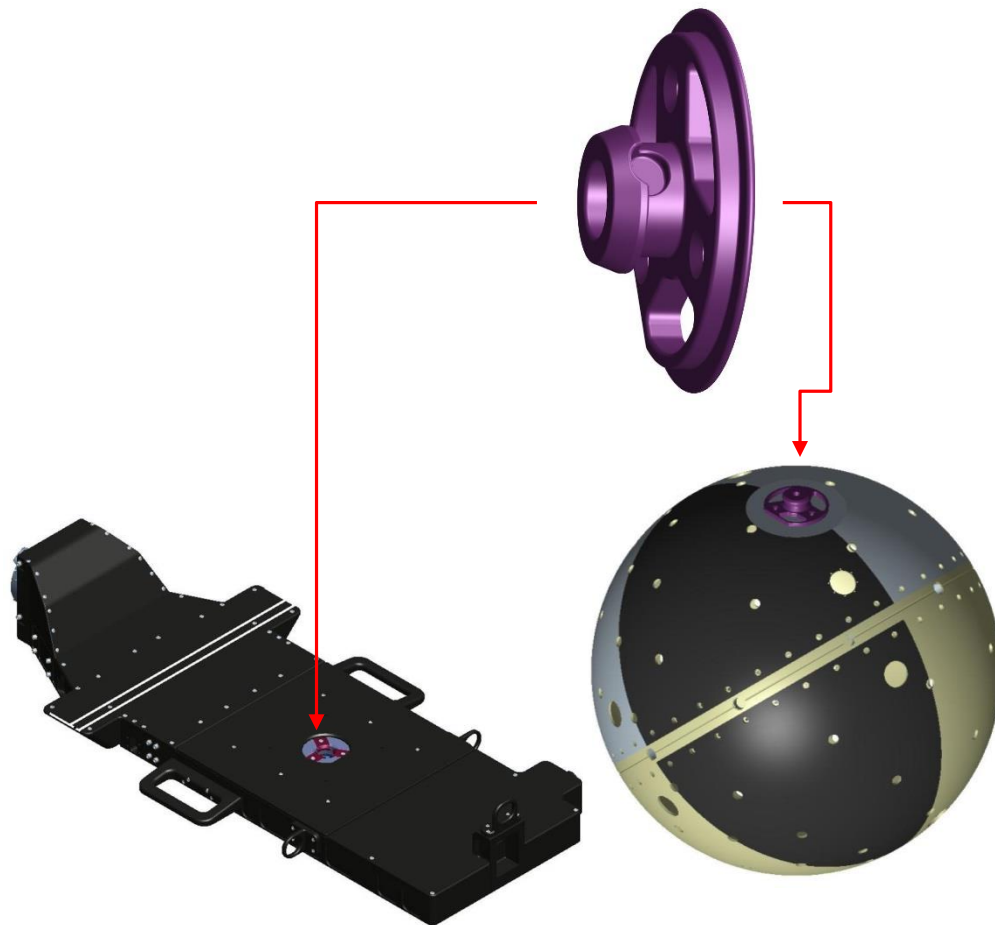


- Cyclops interfaces with the JEM Airlock Slide Table, the ISS Robotic Arms, and the deployable satellites.
- Will deploy satellites up to 100 kg in size contingent upon satellites meeting all ISS safety requirements.



SATELLITE INTERFACE (1/3)

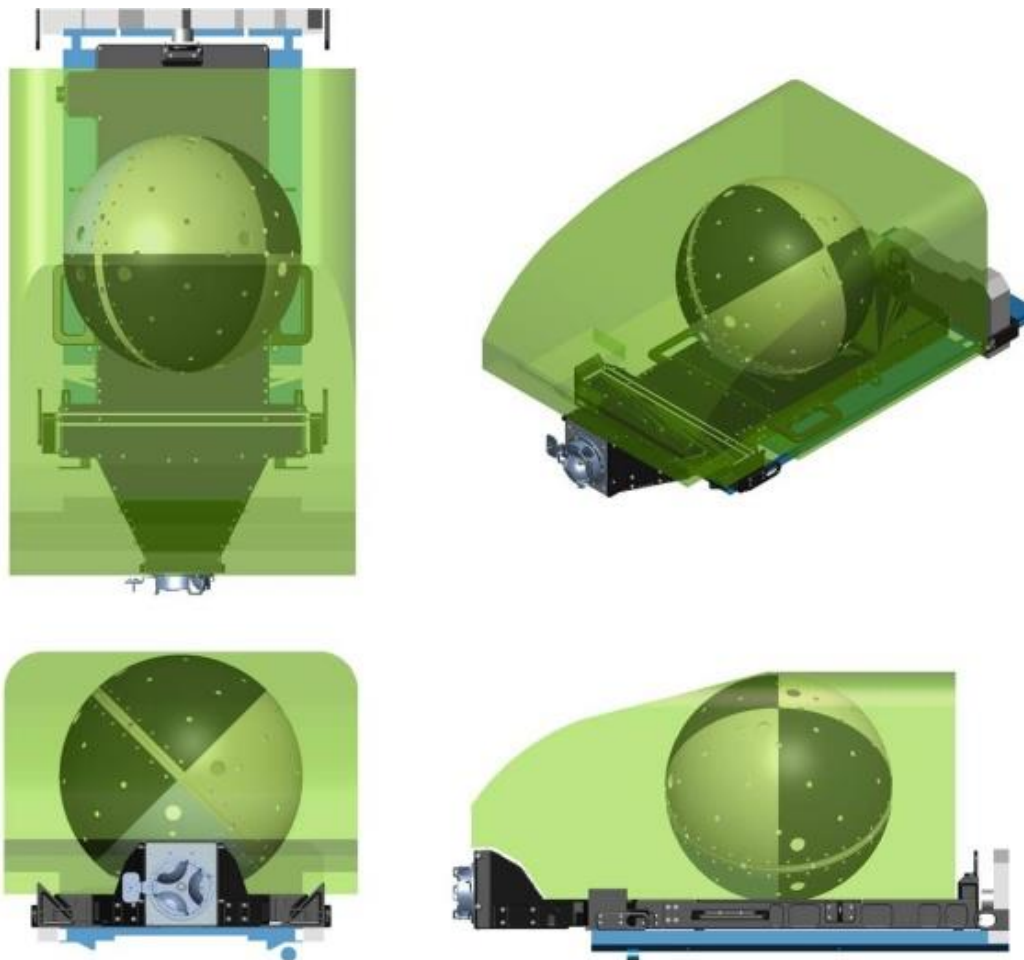
- The interface between Cyclops and its deployable satellite is called the Experiment Attachment Fixture (EAF).
- The EAF attaches to the bottom of the satellite and interfaces with the Cyclops' grapple system.



SpinSat with EAF and Cyclops



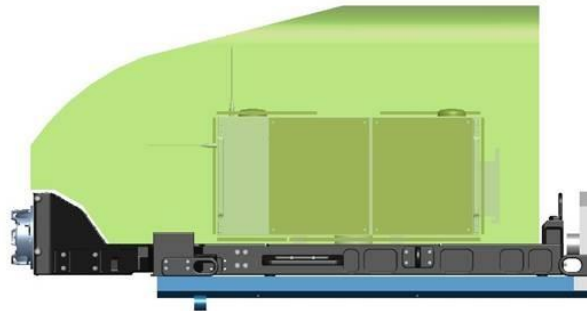
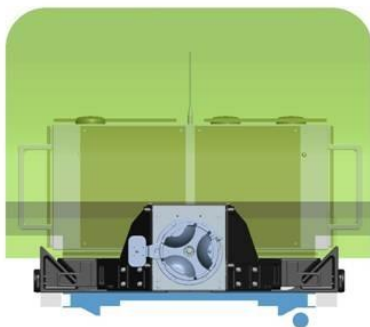
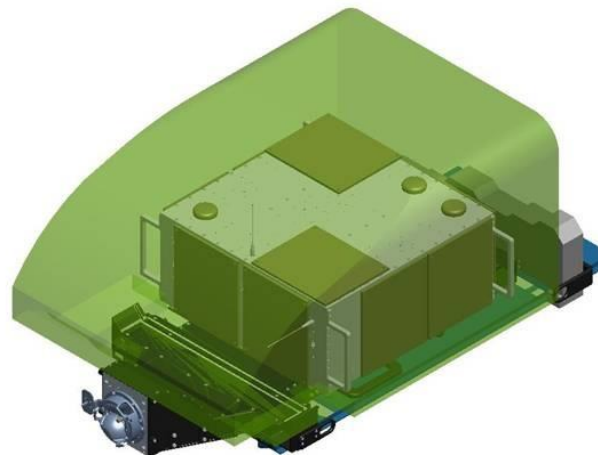
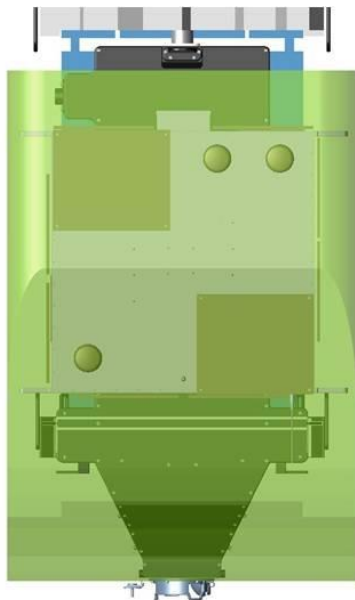
SATELLITE INTERFACE (2/3)



SpinSat in Cyclops Envelope



SATELLITE INTERFACE (3/3)



LoneStar in Cyclops Envelope



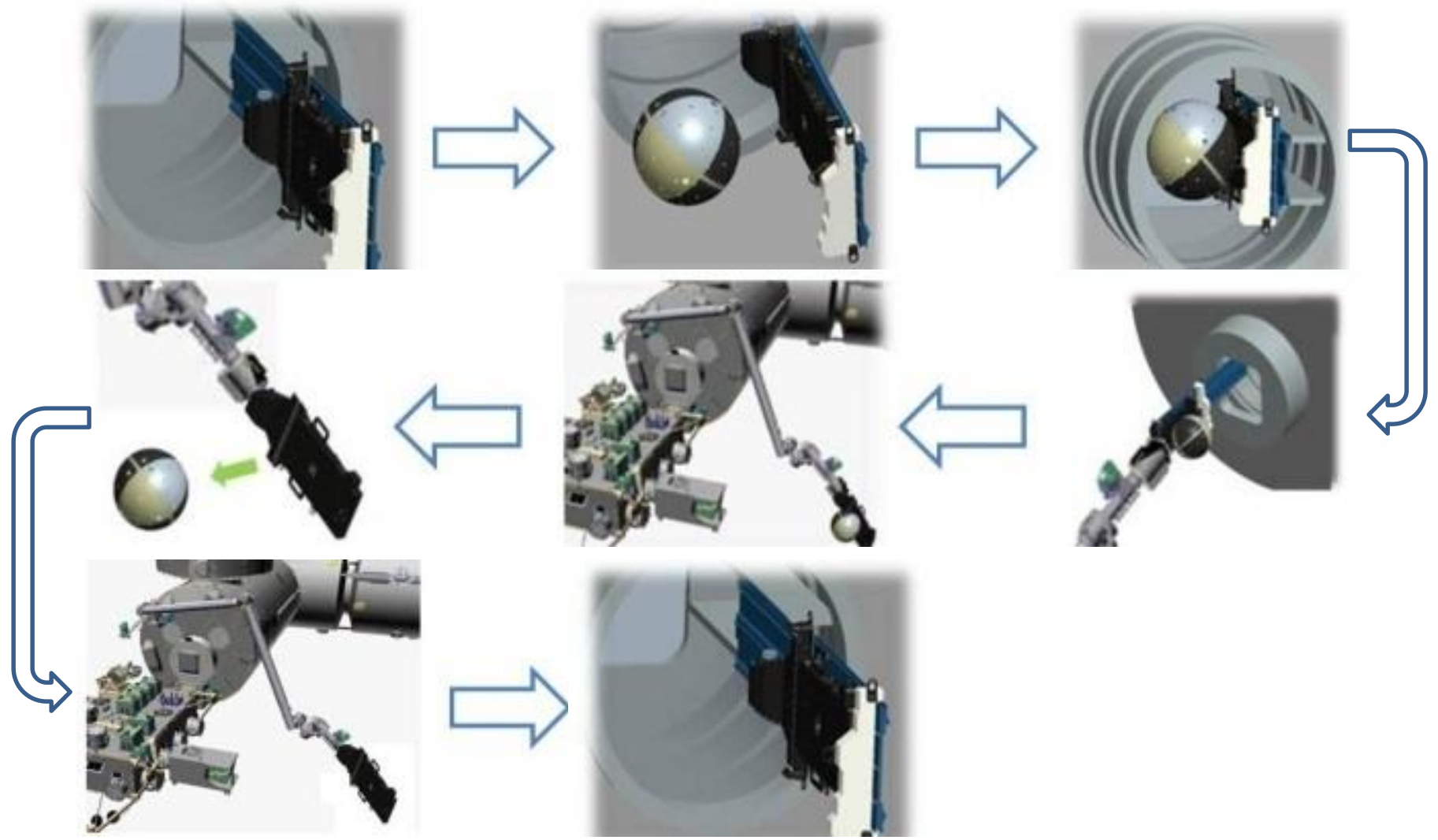
CONCEPT OF OPERATIONS (1/2)



- Cyclops and its deployable satellites will be launched onboard one of NASA's ISS resupply vehicles in a controlled pressurized, soft stowed environment.
- Cyclops and its deployable satellites will be stowed onboard the ISS.
- Cyclops with its deployable satellite will be processed through the ISS JEM Airlock and transferred to the deploy position by one of the ISS robotic arms.
- Cyclops will deploy its deployable satellite with assistance from one of the ISS robotic arms.
- Cyclops will be returned inside the ISS for future use.



CONCEPT OF OPERATIONS (2/2)



8/6/2014

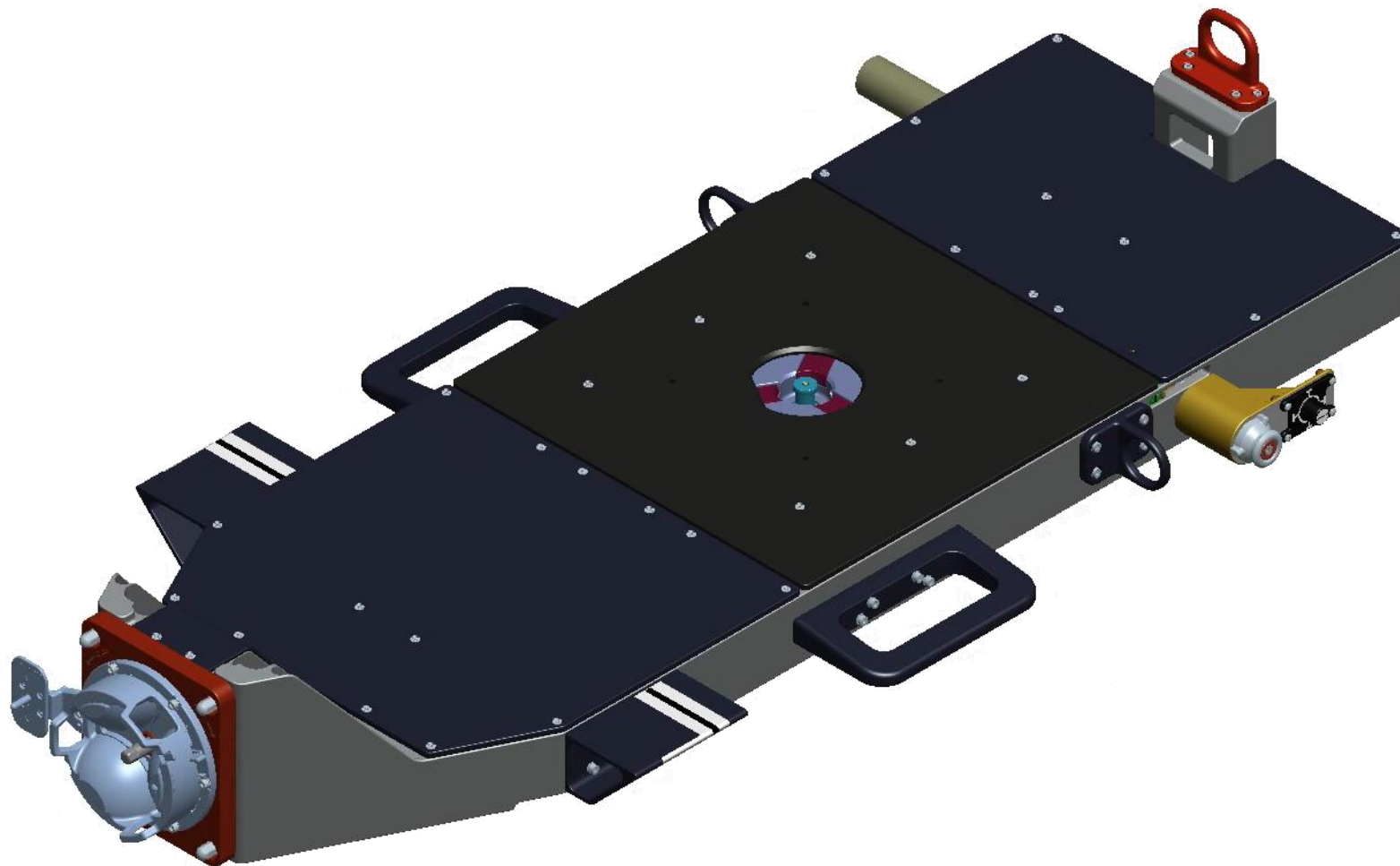
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CREATION

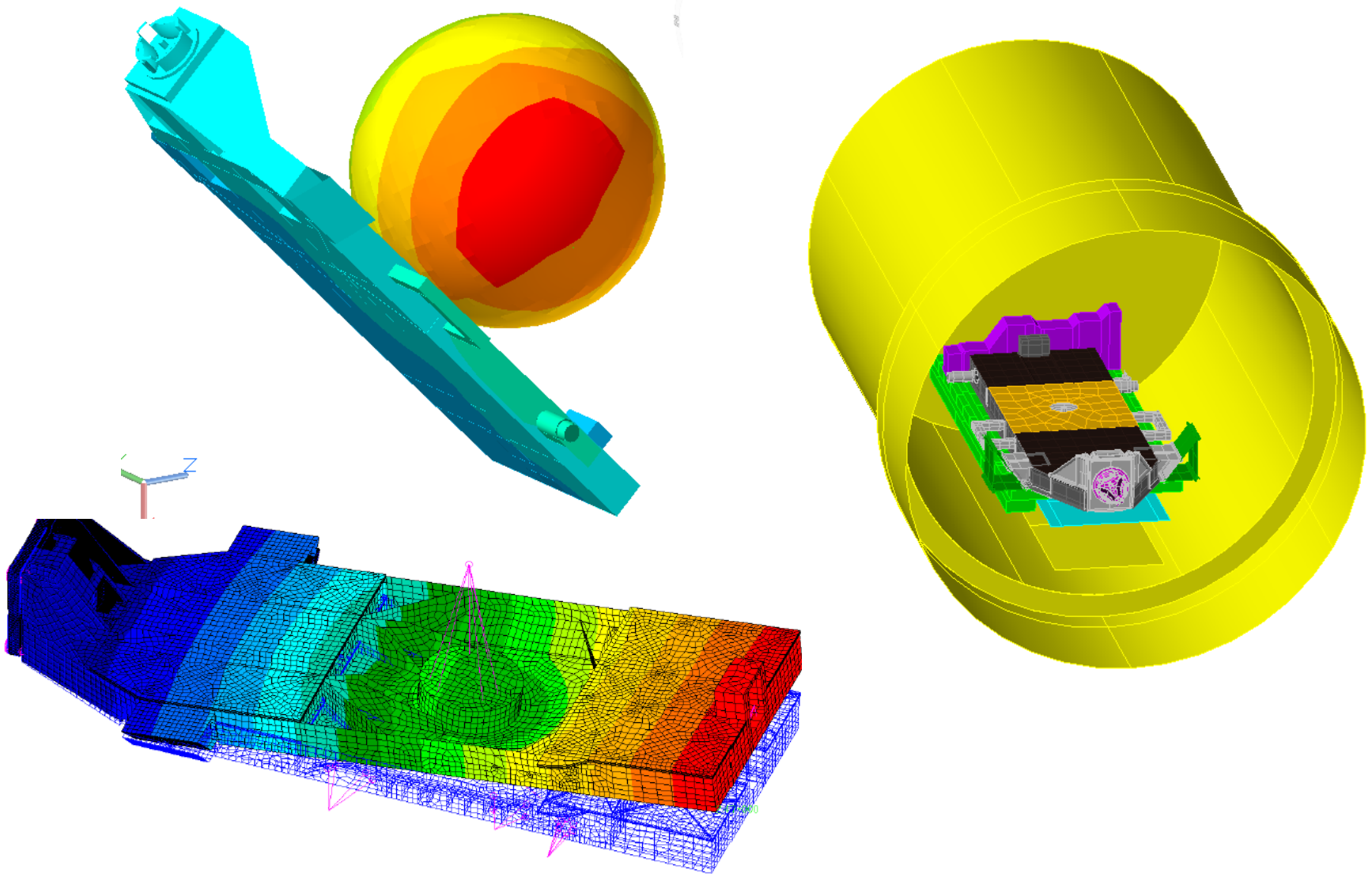


DESIGNED/ANALYZED (1/2)



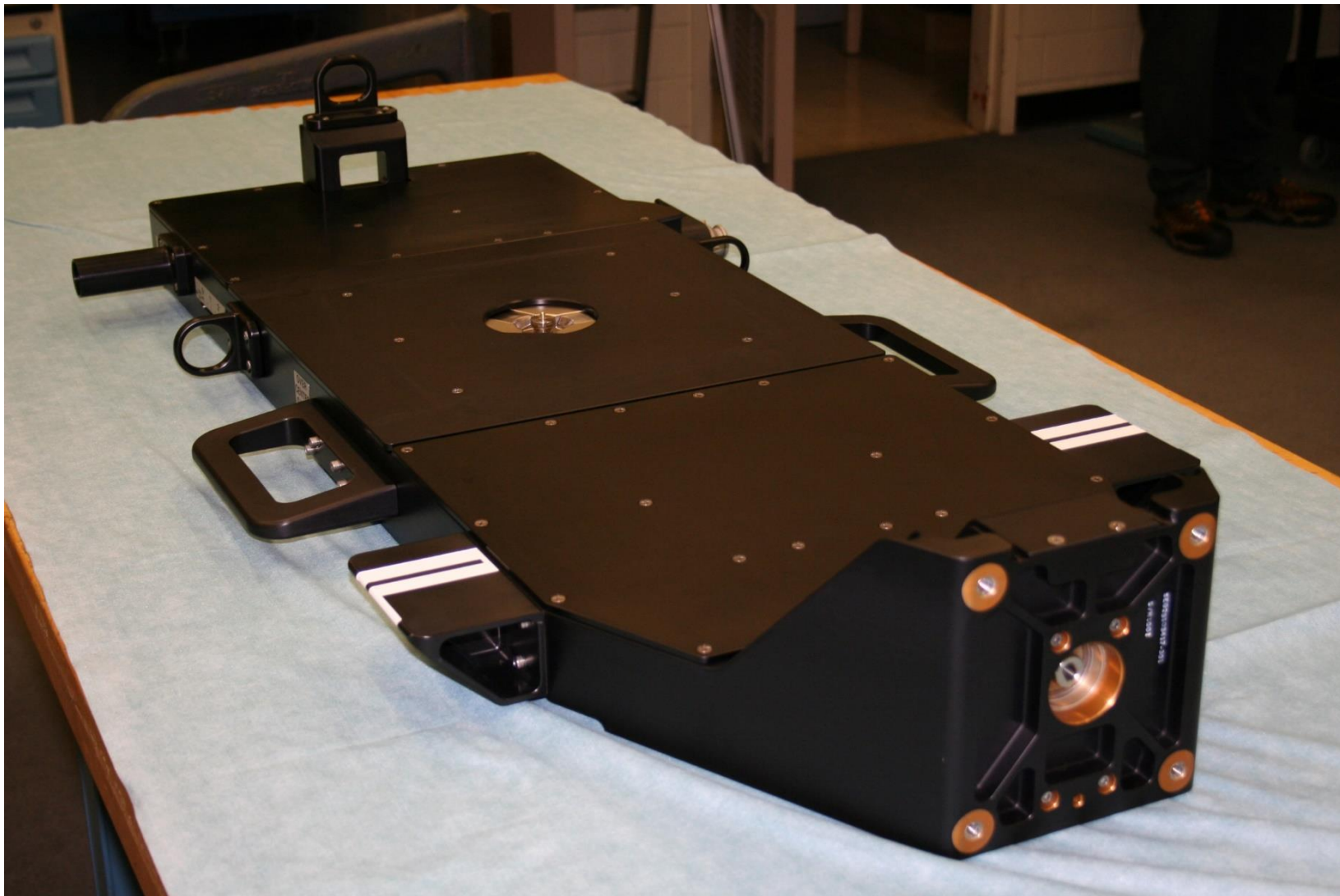


DESIGNED/ANALYZED (2/2)





FABRICATED



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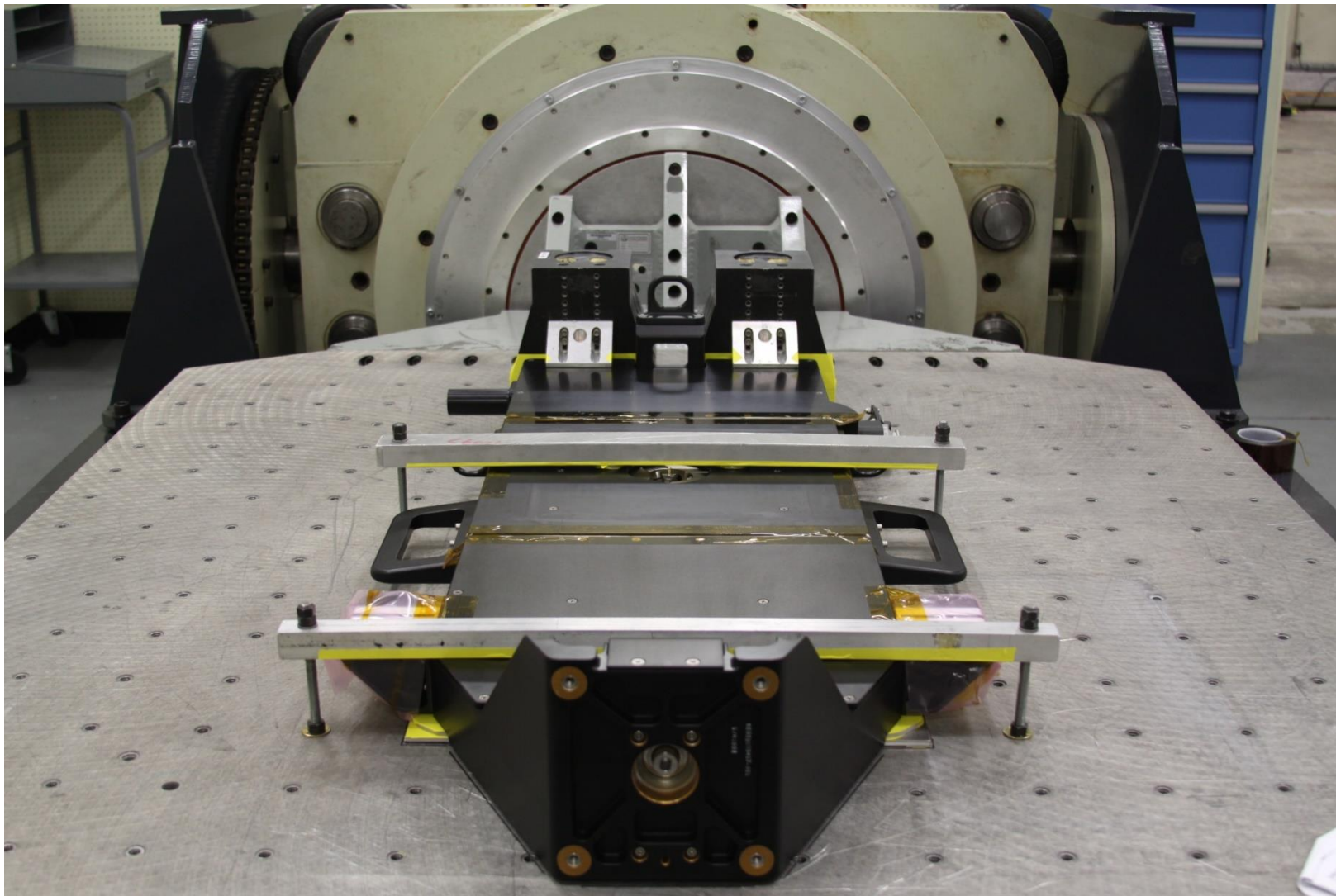


TESTED/CERTIFIED (1/2)



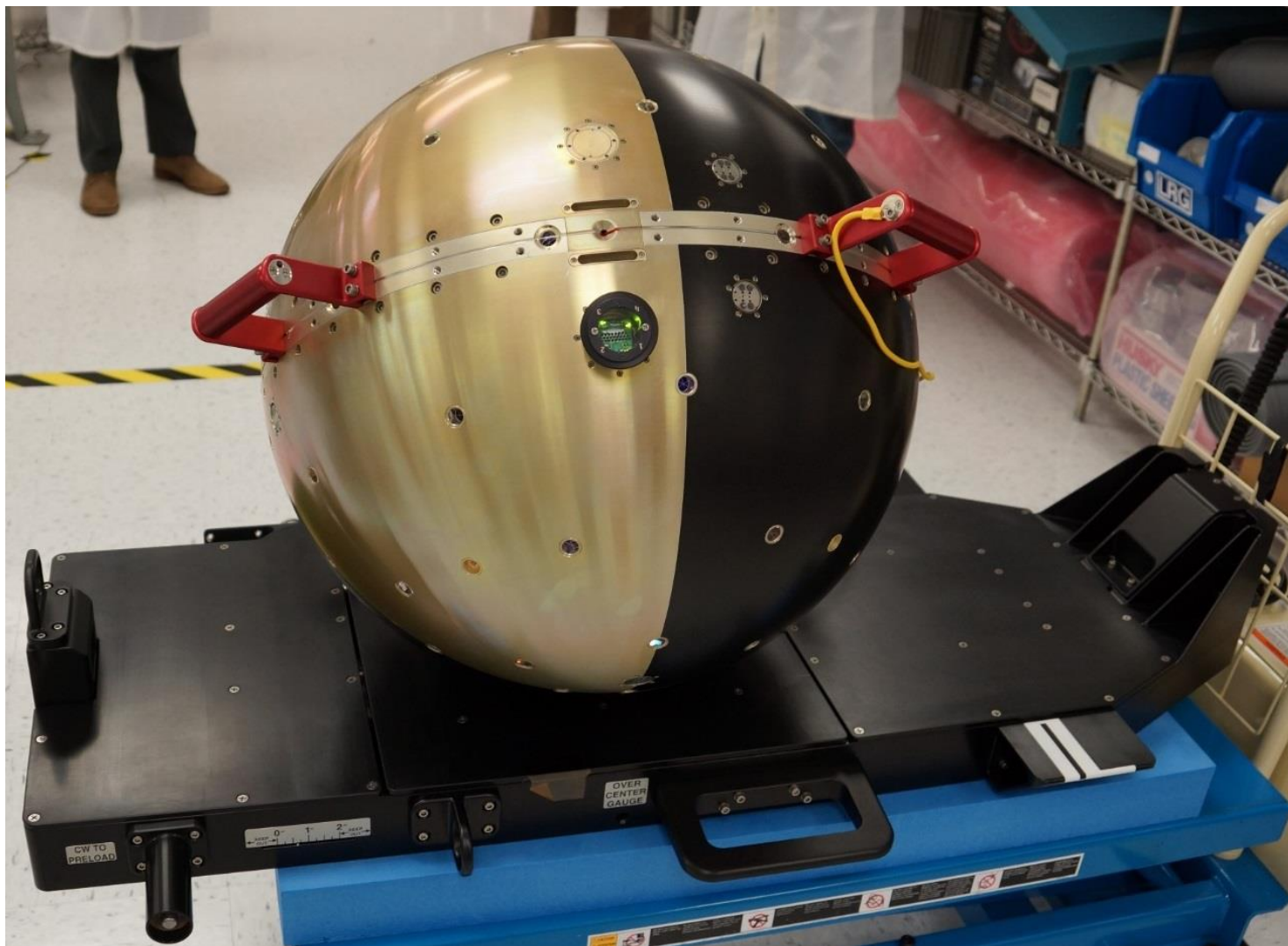


TESTED/CERTIFIED (2/2)





INTEGRATED



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UTILIZATION



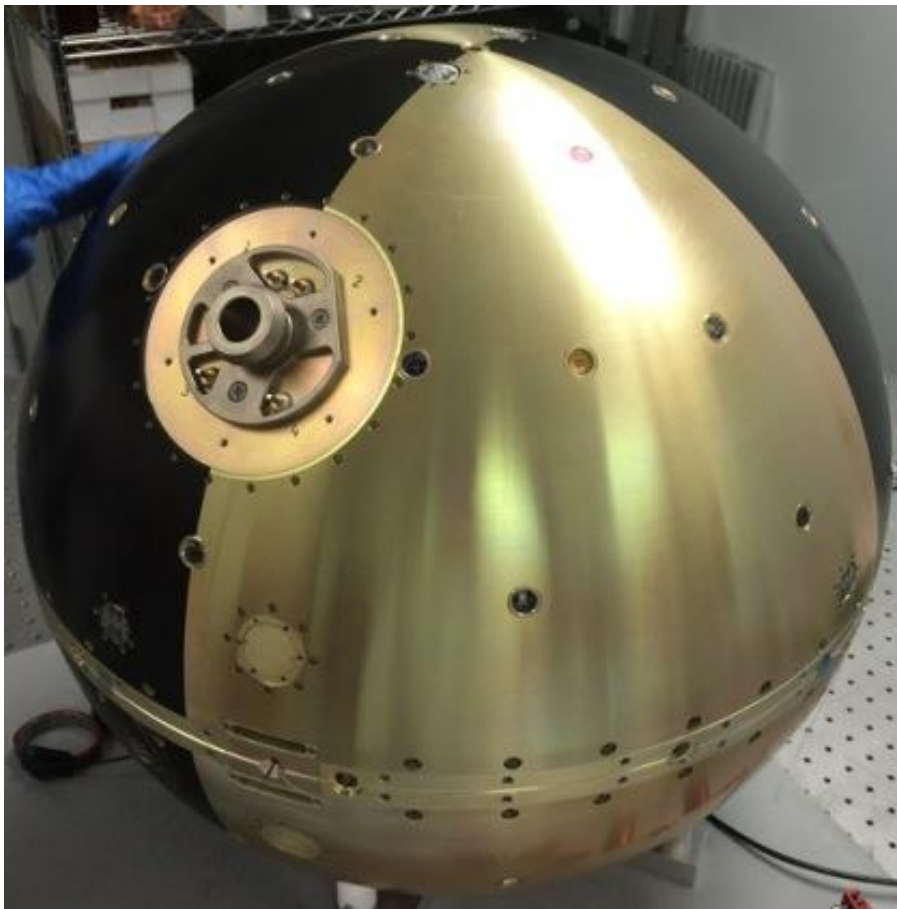
LAUNCH



SpaceX 4
9/12/2014!



SPINSAT DEPLOYMENT (1/2)



- SpinSat (55.9 cm dia; 52kg): Naval Research Laboratory electronically-controlled Solid Propellant thruster, atmospheric neutral density experiment.



SPINSAT DEPLOYMENT (2/2)



Oct
2014!



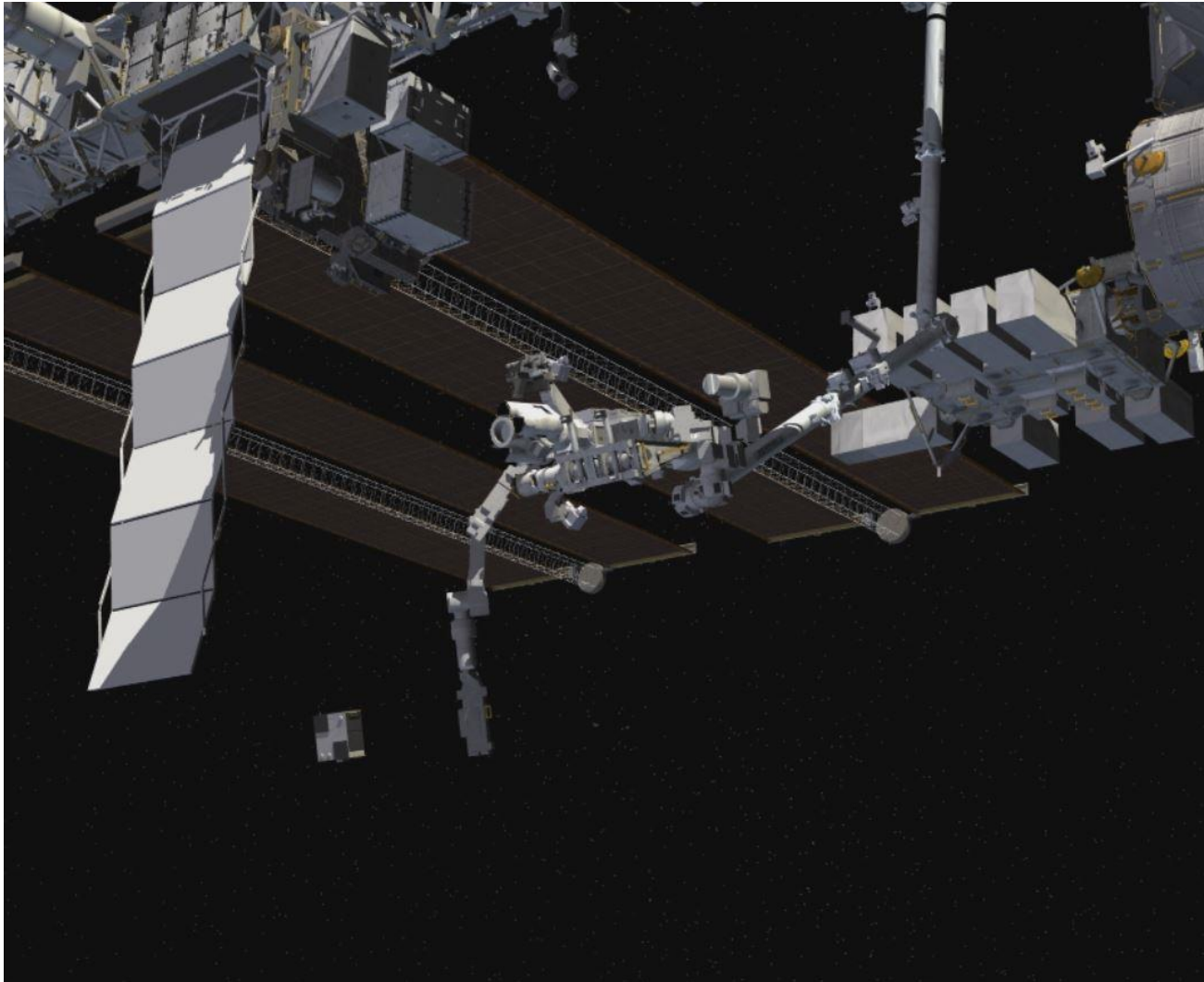
LONESTAR DEPLOYMENT (1/2)



- LONESTAR-2 (64 cm x 64 cm, 31 cm; 50kg): joint NASA, Texas A&M Univ., and Univ. of Texas at Austin autonomous rendezvous and docking experiment.



LONESTAR DEPLOYMENT (2/2)



Jan
2015!



FUTURE UTILIZERS



ISS P.O.C. : Al Holt
NASA Johnson Space Center
2101 NASA Parkway, Houston, TX 77058; 281-244-8394
Al.holt-1@nasa.gov



AUTHORS

Daniel R. Newswander, James P. Smith Ph.D.

NASA Johnson Space Center

2101 NASA Parkway, Houston, TX 77058; 281-483-8868

daniel.r.newswander@nasa.gov

Craig R. Lamb, Perry G. Ballard Ph.D.

Department of Defense Space Test Program

2101 NASA Parkway, Houston, TX 77058; 281-483-3425

craig.r.lamb@nasa.gov



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